A tablet-based electronic medical record system to improve cancer early detection and linkage to care at health facilities in Rwanda

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BACKGROUND

For a cancer early detection program to improve cancer outcomes, patients with abnormal initial tests must be linked to timely diagnosis and care. Effective strategies to accomplish this are not well-understood.

OBJECTIVES

We describe the development and early implementation of a tablet-based electronic medical record (EMR) at rural Rwandan health care facilities to facilitate clinical documentation and tracking of patients participating in the Women's Cancer Early Detection Program (WCEDP), a cervical cancer screening and breast cancer early diagnosis program initiative.

TOOL DEVELOPMENT

- A multi-institutional team was established consisting of software developers and health informatics implementers from Rwanda Biomedical Centre, Partners In Health, and the Clinton Health Access Initiative.
- We utilized the open-source software OpenMRS linked with an android mobile app, mUzima, used on tablets offline at rural health centers. Data are synchronized to a national OpenMRS server.
- In four workshops, clinicians and project leaders from Rwanda's Women's Cancer Early Detection initiative identified key clinical variables and workflows to track and link patients to care.

EARLY FINDINGS

- Twenty-two informatics trainers trained 269 clinicians at 81 health facilities from June- November 2020, enabling the tablet-based tool to be routinely utilized in the cancer early detection program in 4 districts.
- Review of EMR showed 12,987 women had visits for cervical cancer screening and 5,243 women had visits for clinical breast assessment during that time.

Box 1. Early successes and challenges with EMR implementation

Early Successes:

- Multi-institutional and multi-disciplinary collaboration to build and refine tool
- Successful uptake by a number of rural health facilities with little prior EMR experience
- High number of patient visits entered into the EMR, facilitating assessment of the WCEDP's reach

Early Challenges:

- Form completion burden for clinicians, requiring simplification of data entry
- Initially high rates of incomplete data, requiring inclusion of more validation rules
- Variable connectivity

Figure 1. Individuals with visits captured in EMR who received clinical breast assessment or cervical cancer screening, July – December 2020

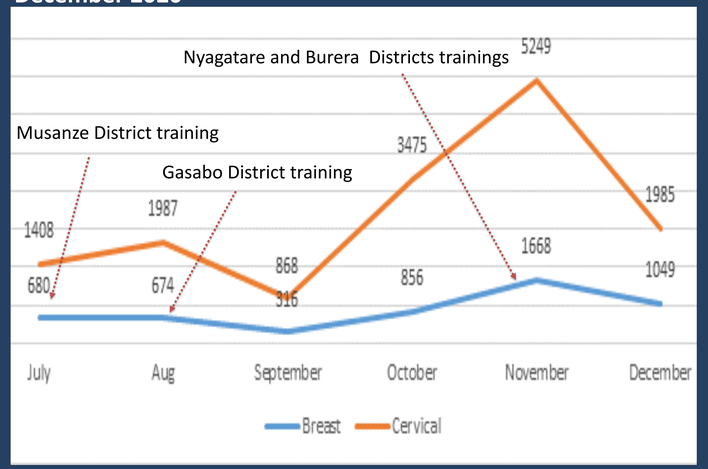
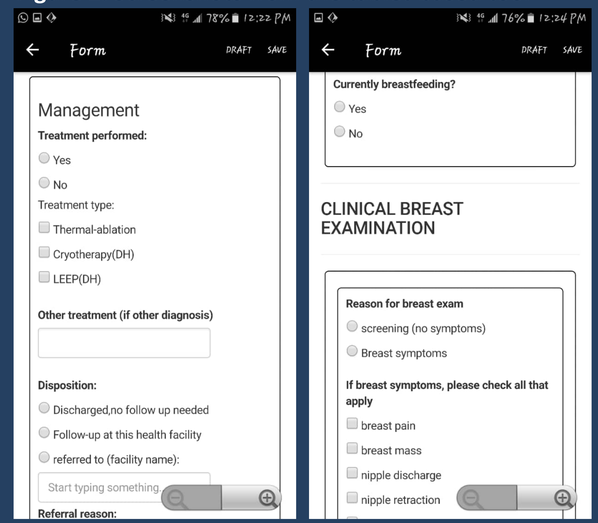


Figure 2. Screenshots from the tablet-based tool



NEXT STEPS

1) Clinician focus groups to assess barriers and guide continued tool refinement.

2) Continued implementation and training in reports to identify missed visits and re-engage patients in care.

3) Assessment of tool's impact on care delivery.

CONCLUSION

- Building an informatics system to facilitate cancer early detection in rural, low-resource health facilities is feasible but requires continuous adaptation, training and multidisciplinary cross-institutional collaboration.
- Further evaluation will investigate the tool's impact on timely patient care and minimization of loss to follow-up

ACKNOWLEDGMENTS

This work was supported by the Breast Cancer Research Foundation, Grant BCRF-20-149